This listing of claims will replace all prior versions and listings of claims in the application.

Listing of Claims:

1(currently amended). A mixed conductor in the form of a single material comprising an electron conductor portion made of an inorganic material and a proton conductor portion made of an inorganic material, said electron conductor portion and said proton conductor portion being fixed together by at least one of covalent bonding, intercalation and inclusion so as not to dissolve in water.

2 (currently amended). A mixed conductor in the form of a single material comprising an electron conductor portion ~~made of an inorganic material obtained by carbonizing an organic material~~ and a proton conductor portion made of an inorganic material, said electron conductor portion and said proton conductor portion being fixed together by at least one of covalent bonding, intercalation and inclusion, and wherein said electron conductor portion is made of an inorganic material obtained by carbonizing an organic material.

3(currently amended). The mixed conductor in the form of a single material according to claim 1, wherein said electron conductor portion is obtained by carbonizing at least one organic compound selected from the group consisting of aliphatic hydrocarbons, aromatic hydrocarbons and derivatives of aliphatic hydrocarbons and aromatic hydrocarbons.

4(canceled).

5(currently amended). The mixed conductor in the form of a single material according to claim 1, wherein said electron conductor portion is a carbonaceous material selected from the group consisting of graphite and carbon nanotubes.

6(currently amended). The mixed conductor in the form of a single material according to claim 1, wherein said proton conductor portion contains at least one member selected from the group consisting of phosphorus-containing compounds, sulfur-containing compounds, carboxylic acids, and inorganic solid-state acids.

7(currently amended). The mixed conductor in the form of a single material according to claim 1, wherein the electron conductor portion is fixed to the proton conductor portion by a covalent bond.

8(canceled).

9(canceled).

10(currently amended). The mixed conductor in the form of a single material according to claim 1, wherein said electron conductor portion has consecutive carbon-carbon bonds including a carbon-carbon double bond.

11(currently amended). The mixed conductor in the form of a single material according to claim 1, wherein said electron conductor portion is obtained by carbonizing an organic compound having one of or both of a carbon-carbon double bond and a carbon-carbon triple bond.

12(currently amended). A method for producing a mixed conductor in the form of a single material comprising:

a first step of obtaining a high molecular precursor by polymerizing an organic compound having one of or both of a carbon-carbon double bond and a carbon-carbon triple bond with a proton conducting material; and

a second step of pyrolyzing the precursor obtained in the first step in an inert atmosphere.

13(currently amended). A method for producing a mixed conductor in the form of a single material comprising:

a first step of obtaining a high molecular precursor by dispersing a proton conducting material into an organic compound polymer having one of or both of a carbon-carbon double bond and a carbon-carbon triple bond; and

a second step of pyrolyzing the precursor obtained in the first step in an inert atmosphere.

14(previously presented). The mixed conductor producing method according to claim 12, wherein the organic compound having one of or both of the carbon-carbon double bond and the carbon-carbon triple bond is an aliphatic hydrocarbon or an aromatic hydrocarbon.

15(previously presented). The mixed conductor producing method according to claim 14, wherein said organic compound is at least one member selected from the group consisting of polyacetylene, resorcinol, phenol, phenylphenol, polyaniline, polypyrrole, polythiophene, phenylphosphonic acid, and phenylsilane alkoxide.

16(currently amended). The mixed conductor producing method according to claim 12, wherein said proton conducting material is at least one member selected from the group consisting of phosphoric acid, phosphates, sulfuric acid, sulfates, tungsten oxide hydroxide, rhenium oxide hydroxide, silicon oxide, tin oxide, ~~zirconia~~ zirconium oxide, tungstophosphoric acid, and tungstosilicic acid.

17(currently amended). A mixed conductor producing method wherein an organic compound having a π bond is dehydration-condensation polymerized and bound with a compound having movable protons to obtain a precursor having proton conduction, and [[an]] energy is applied to said precursor under an inert gas atmosphere to thereby impart electron conduction to the precursor.

18(currently amended). A mixed conductor in the form of a single material comprising an electron conductor portion made of an inorganic material and a proton conductor portion made of an inorganic material, said electron conductor portion and said proton conductor portion being fixed together to form a catalyst support ~~insoluble~~ which does not dissolve in water and a noble metal catalyst supported on said catalyst.

19(original). The mixed conductor producing method according to claim 12, comprising a third step of causing the precursor burned in the second step to support a noble metal catalyst.

20(currently amended). A mixed conductor in the form of a single material comprising an electron conductor portion made of an inorganic material obtained by carbonizing an inorganic material and a proton conductor portion made of an inorganic material, said electron conductor portion and said proton conductor portion being fixed together to form a catalyst support ~~insoluble~~ which does not dissolve in water and a noble metal catalyst supported on said catalyst support.

21(currently amended). The mixed conductor in the form of a single material according to claim 1 wherein said electron conductor portion is selected from the group consisting of carbonaceous materials, gold, palladium, platinum, magnesium, lithium, titanium, and alloys thereof; and

the proton conductor portion is made of at least one member selected from the group consisting of carbonic acid, boric acid, phosphoric acid, phosphoric acid esters,

sulfuric acid, sulfuric acid esters, tungsten oxide hydroxide, rhenium oxide hydroxide, silicon oxide, tin oxide, ~~zirconia~~ zirconium oxide, tungstophosphoric acid, and tungstosilicic acid.

22(currently amended). The mixed conductor in the form of a single material according to claim 21 wherein said electron conductor portion is a carbonaceous material.

23(currently amended). The mixed conductor in the form of a single material according to claim 2 wherein said proton conductor portion is formed of phosphoric acid groups and said carbonaceous material has a graphite structure.

24(currently amended). The mixed conductor in the form of a single material according to claim 2 wherein said proton conductor portion is at least one member selected from the group consisting of phosphoric acid, phosphates, sulfuric acid, sulfates, tungsten oxide hydroxide, rhenium oxide hydroxide, silicon oxide, tin oxide, ~~zirconia~~ zirconium oxide, tungstophosphoric acid, and tungstosilicic acid.

25(currently amended). The mixed conductor in the form of a single material according to claim 24 wherein said electron conductor portion has a graphite structure.

26(currently amended). The mixed conductor in the form of a single material according to claim 21 wherein said electron conductor portion is selected from the group consisting of carbonaceous materials, gold, palladium, platinum, magnesium, lithium, titanium, and alloys thereof; and

the proton conductor portion is made of at least one member selected from the group consisting of carbonic acid, boric acid, phosphoric acid, phosphoric acid esters, sulfuric acid, sulfuric acid esters, tungsten oxide hydroxide, rhenium oxide hydroxide, silicon oxide, tin oxide, ~~zirconia~~ zirconium oxide, tungstophosphoric acid, and tungstosilicic acid.

27(currently amended). The mixed conductor in the form of a single material according to claim 26 wherein said electron conductor portion is a carbonaceous material.

28(currently amended). The mixed conductor in the form of a single material according to claim 27 wherein said proton conductor portion is formed of phosphoric acid groups and said carbonaceous material has a graphite structure.

29(currently amended). The mixed conductor in the form of a single material according to claim 20 wherein said proton conductor portion is at least one member selected from the group consisting of phosphoric acid, phosphates, sulfuric acid, sulfates, tungsten oxide hydroxide, rhenium oxide hydroxide, silicon oxide, tin oxide, ~~zirconia~~ zirconium oxide, tungstophosphoric acid, and tungstosilicic acid.

30(currently amended). The mixed conductor in the form of a single material according to claim 29 wherein said electron conductor portion has a graphite structure.

31(new). A mixed conductor in the form of a single material comprising an electron conductor portion made of an inorganic material and a proton conductor portion made of an inorganic material, said electron conductor portion and said proton conductor portion being fixed together by intercalation so as not to dissolve in water.

32(new). A mixed conductor in the form of a single material comprising an electron conductor portion made of an inorganic material and a proton conductor portion made of an inorganic material, said electron conductor portion and said proton conductor portion being fixed together by inclusion so as not to dissolve in water.